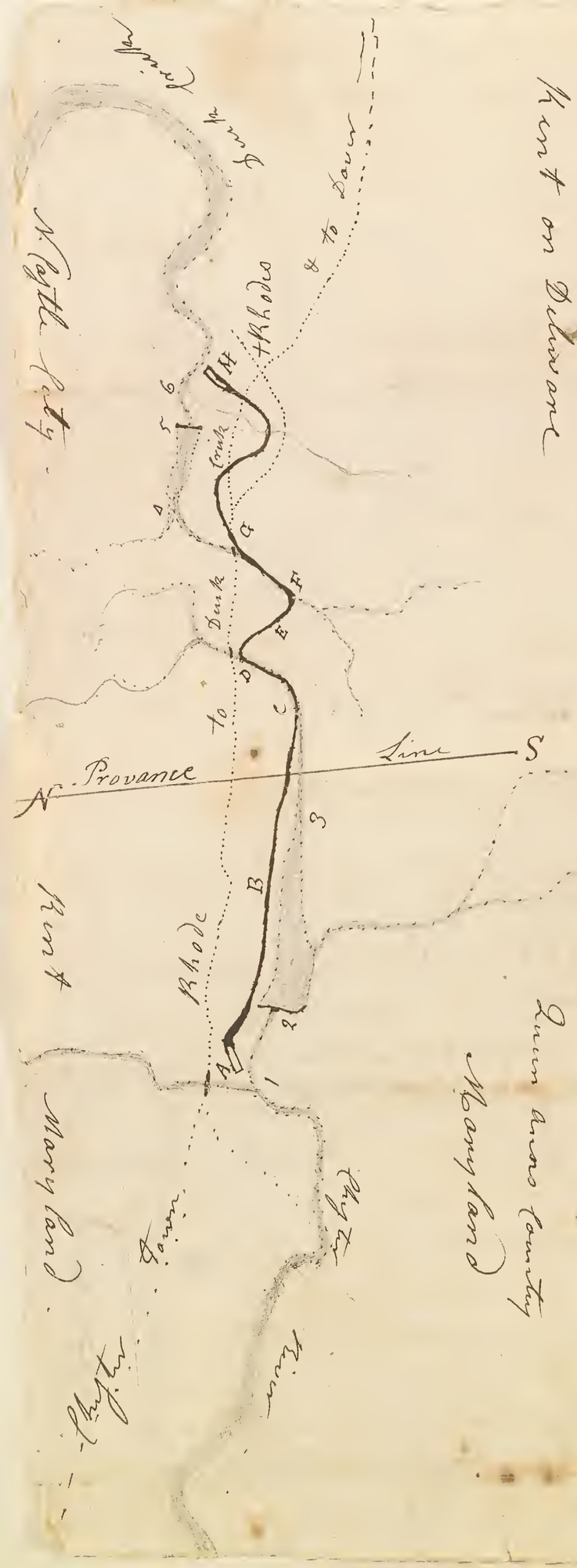
Drafts of Surveys
Sketches and Calculations
of Improvements &c
by Thomas Filpin sen.

Cat. 334991
MSS 290 B
RB NMAH

Conall
Chester River
to
Duck Creek

Remarks on the Survey of the Delaware



A Draught of Chester River & Duck Creek by Inspection

1 The head of the tide in Chest.r Riv.r
2 Vansants Mill Damb
3 the head of the pond
4 the head of Rowland Perreys Pond on Duck Creek
5 Perreys Damb
6 the head of the Tide in Duck Creek

A a Lock at the Head of Chester River
B the Canall
C Where the Canall Joyns the Branch
D the Canall Leaves the branch
E the Middle ground
F The Canall Joynes Duck Creek
G the Canall Leaves the Streme
H a Lock on the Side of Duck Creek

A Computation of the Cost of Erecting 2 Locks one on the head of Chester River in Maryland and one on the head of Duck Creek in Pensylvania

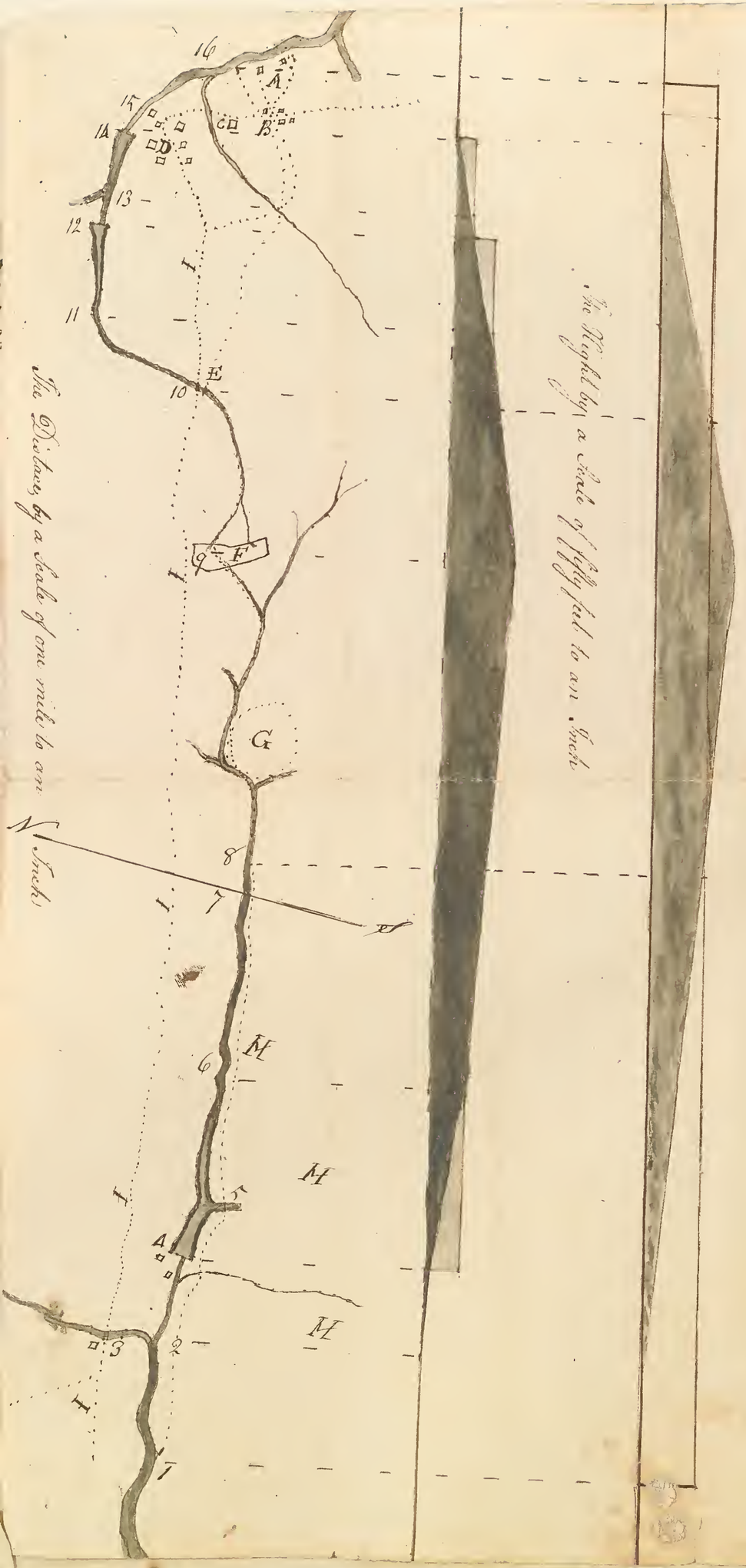
	£	S.	D
To Deepen the water up the Lock on the Head of Chester	1000	0	0
Stone for a Lock 100 feet Long by 15 feet in the clear and 35 feet high of Walls the Side walls 6 feet and the end 10 feet thick is 2864 Pearches of Stone at 4/ ℔ Pearch is	572	16	0
Masons work attendance and diging with Lime	572	16	0
the inside casing with Plank and 4 Gates	250	0	0
Iron work Say	100	0	0
Same for a Lock at Duck Creek	2495	12	0
	2495	12	0
Diging the Canall 12 Miles at 15 ℔ Rodd is	4991	4	0
Purchasing Land Say	5700	0	0
other Expences	2000	0	0
	6491	4	0
	£ 5408	16	0
N.B. if this was Done by Private Interest and 4 Vessells Went through ℔ Day at 40/ Each Lock (Which is a Low Rate) at 300 Days is	70000	0	0
Which is 600 ℔ year More than Interest for Money	4800	0	0

By Raising the water 20 feet in a Lock I am of opinion 10 feet Deep Will carrey Through the Middle ground

Some Reasons why the Pass between Duck Creek and Chester River is Most Practicable — Chester River Lays Nearly opposit Baltimore Town the Most Centricall and Thriving Place in Maryland not ill. convenient to Anopolus and Patuxent River and convenient To Baltimore County in Which are Severall Rivers Runs some Distance up — out of Chester River to the South There is a Pass Through above Kent Island into Wey River where a Vessill of 5 feet water may Pass and will Save 50 Miles more than to go Round out of Wey River which Runs up into the Middle of a Large County There is good water into Miles and Tread haven Rivers which head Near talbert Cort house and within 6 Miles of the Middle of Choptanck River all of which command a Circuit of Near 60 miles without going into Chesepeak bay — & none of which are so Convenient to any Carrying Place as from Chester River to Duck Creek

For Inspection and further Improvement this Essay is addressd.
to the American Philosophicall Society for Promoting usefull knowledg
by their friend ..... Thomas Gilpin

Dissertation
Sent from
Chester to Dr Franklin.



The Table

1. 6 feet water in Chester
2. The Head of the Tide
3. The Cypruss Branch
4. Vansants Mill Damb
5. The Andiver Branch
6. The Head of Vansants Pond
7. The Provence Line
8. Water Suffitiant for a Canall
9. The Middle Ground
10. Suffitient Water for a Canall in Duck Creek Strams
11. The Head of Griffins Pond
12. Griffins Mill Damb
13. The Head of Perrys Pond
14. Perreys Mill Damb
15. Pereys Mill & the Head of the tide
16. Water for a Vessell in Duck Creek

A. Duck Creek Landing
B. The X Roads
C. The New Church
D. Duck Creek Town
E. The Province Bridge
F. The Widow Darlings Hute at the Middle Ground
G. Edward Tilghman Esq.rs Land
HHH. James Tilghman Esq.rs Land
IIII. Duck Creek Roade

The Distance from Tide to Tide 12 Miles
Highth of the Middle Ground at 9 is 33 feet — from a Suffitient Highth on Each Strum is 4 Miles and ¼
The Greatest Depth from 8 to 12 feet on The Middle Ground

Remarks on the Enaxt Draught of Duck Creek and Chester River — from 1 on Chester to 16. on Duck Creek Is about 13½ Miles wheare theare is Water Suffitient for a Vessell that May Carry 1000. Bushells — Cleaning out one or two Small Barrs) the Springs Lay of a Suffitient Highth to Support a Canall 22 to 25 feet above the Surface of the Tide the Land is also of a Suffitient Highth to Support a Cannall that Highth from Tide To Tide the Land is mostly a Clay Loome and No Stones the Wells on the Middle Ground and most of The way are from 7 to 12 feet Deep

I am of Opinion that its is most Expedient at first To attempt no other than an Inland Navigation for a Barge of about 500 Bushells which Cannall may be Done for ⅓ of the Expence of one with Locks Suffitient for a Shallop and Which at any Time when the Great Utility is Experienct and better known may Be Improved into the other Kind without any Loss of the Present Expence

Which Remarks for the Enaxt Plan is Humblely offerd to the members of the American Society for Improvement also to the Committe of Merchants in Philadelphia By Their Friend

Thos. Gilpin

June 9. 1769

of Which I Submitt the Following Estimate

14 Miles is 4480 Rhod of a Canall 16 feet wide and 4 feet Deep which is Suffitient for a Barge of 500 Bushells which @ 20/ ℔ Rhod is	£ 4480
To which add for Cutting 4¼ miles of the middle Ground which is 1360 Rhod @ 40/ ℔ Rhod Extraordinary is	2720
also to Build ware Houses and to fix Crains	800
	£ 8000
Adishinal Cost to accommodate a Navigation for a Shallop to Enlargeing the Canall to 30 feett wide and 7 feet Deep at 50/ ℔ Rhod	11200
also 40/ Extraordinary on the 4¼ miles is	2720
To Erect 2 Locks @ 2500 £ Each is	5000
	£ 18920
The whole Expence with Locks	£ 26920

Canall
Chyster Riv
To
Duck Creek

Draft of Estimate
For a Canal from
Head of Chester
to
Duck Creek —

Remarks on the Inner Dock at the Arsenal

Brought Over £ 12210 " "

" 0 " 0

" 0 " 0

" 0 " 0

" 0 " 0

" 0 " 0

" 0 " 0

A Computation of the Cost of a Navigation for Barges from Christianna To Elk ——— Viz

12 Miles & 10 Rhod by the Courses of the Cannall At 10 feet Wide & 6 feet Deep is 253550 Cubick Yards of Earth to be Thrown out which at 6d p yard is £338 " 15 " 0

2 Miles of the middle Ground will Require To be 15 feet in Depth and 30 feet in Width on an Average more than the Other which is 17600 Cubick yards at 12d is ..... 880 " 0 " 0

Making a Damb a Cross Christianna to vend Superfluous water and to Carry the Cannall Over in ..... Say ..... 300 " 0 " 0

Making of 4 Small dambs over Some small Valley to Save Diging further Round and to Give place for Boats to Pass Each Other in £ 100 Each is ..... 400 " 0 " 0

Diging 4 points of Small Hills or Banks to Save Diging Round &c. Say 100 £ Each ... 400 " 0 " 0

Expence of Tools Liquers Small Houses for workmen to Lay and Cook in &c. say ... 500 " 0 " 0

Securing the Ends of the Cannall with Stone Walls ..... Say £ 500 Each End is ... 1000 " 0 " 0

Building a ware House at Each end of the Cannall to Accomodate Goods & Produce Carried in the Cannall Say £ 1000 Each 2000 " 0 " 0

Diging a Channel from the ends of the Cannall to the Natureal Navigation of Christianna & Elk to let Shalloops up to it about 20 Rhods Each is 40 Rhod at 10 £ p Rhod is ..... 400 " 0 " 0

£ 12210 " 15 " 0

Carried Over.

Brought Over ... £ 12210 " 15

Additional Cost to alter the barge into a Lock Navigation ..... Viz

To add 4 Locks at Each end at 1000 £ Each is ..... 8000 " 0 " 0

To widen & Deepen the Cannall to 30 feet Wide & 8 feet Deep will amount to 506000 Cubick yards of Earth to be Removed at 12d is 253414 " 0 " 0

Tools Liquors &c. &c. &c. say ..... 2000 " 0 " 0

To A fund for Raising the sum of 100 £ p year to pay the ware and Tare & Takeing Care of the Locks is ..... 3000 " 0 " 0

To Purchasing 2 mills which owners the water which will be wanted for Supplying the Locks .... say .... 5000 " 0 " 0

£ 43414 " 0 " 0

£ 55562 " 15 " 0

The odds is 43414 £ the yearly Interest of which is £ 2600 " 12 " 10 ..... 2600 " 12 " 10

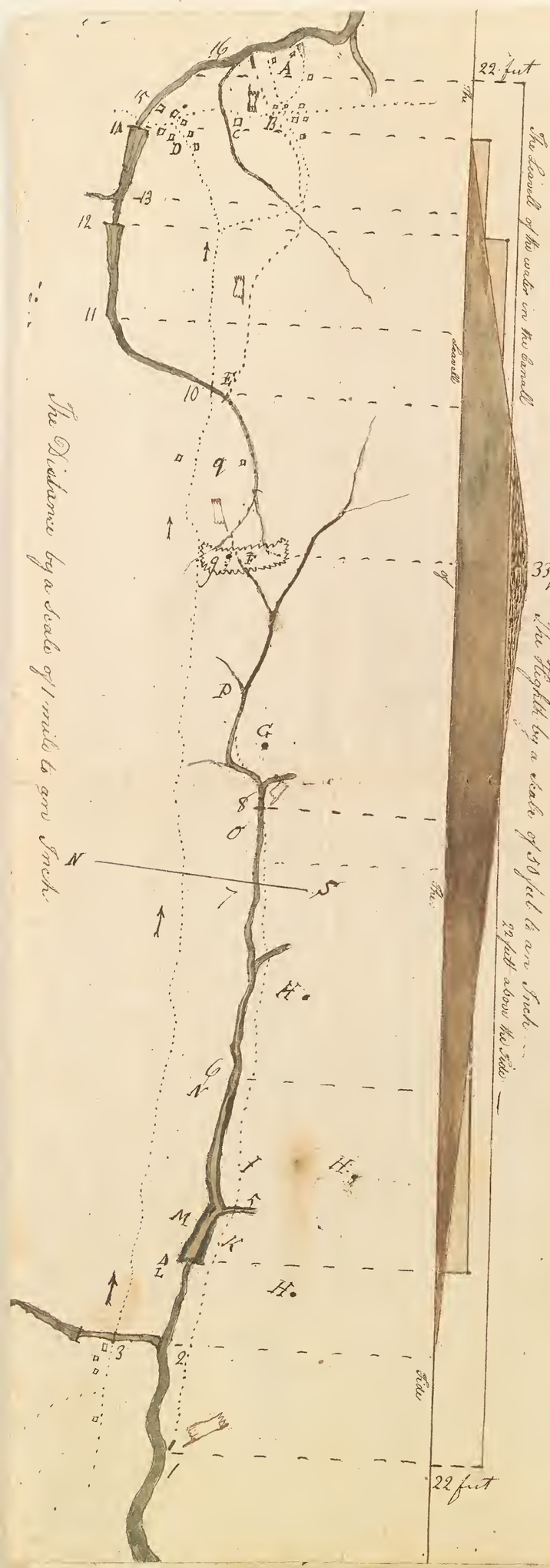
The Carriage may be done by a barge Navigation for 1d p Bushell or 3d p Barrell at which Suppose

300,000 bushls is at 1d . 1250
100,000 barrels is at 3d . 1250 } is 2500 p year ... £ 2500 " 0 " 0

As the interest of the Odds in the Cost may be supposed to Pay the freight by barges, we Conceive that most adviseable more especially as it may be Altered at a future day without any Considerable Loss in the first Expence

Estimate of Jamie
Christiana &
Head of Pigs

Draft & Estimates
of a Canal
from Chertsey to
Deal Creek



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A — Duck Creek Landing
B — The X Roads
C — The New Church
D — Duck Creek Town
E — The Province Bridge
F — The Widow Darlings field at the Middle Ground
G — Edward Tilghmans Esq. Land
H H H — James Tilghman Esq. Land
I — Co. Ll. Loyd — Ditto
K — Jn. Vansants — Ditto
L — Ditto — Ditto
M — John Blackistons — Ditto
N — Nath. Knocks — Ditto
O — William Blackiston — Do.
P — Jn. Clarks — Do.
Q — Sam. West — Do.
→ — Duck Creek Road
▭ — The Suppos Coarse of the Canall

The Distance from Tide to Tide 12 Miles

The Height of the Middle Ground 33 feet above the Surface of the Tide

The Height of the Springs or Water in the Streams Suffitient to Support a Canall and Locks 22 feet above the Tide

The Distance from Wheare the Water may be Taken out of Town Streme at the Height of 22 feet is 4½ Miles

The Deepest Digging on the Middle Ground from the Surface of the Water in the Canall 17 feet

The Whole Distance from Convenient Places to Land the Canall at Each Tide is about 13½ Miles

Remarks on the Enexd Draught of Duck Creek and Chester River — from 1 on Chester to 16 on Duck Creek is about 13½ Miles Where theare is water Suffitient for a Vessell that may Carrey 1000 Bushells (by Cleaning out one or two Small barrs) the Spr Lay of a Suffitient Height to Support a Canall 22 to 25 feet Above the Surface of the Tide The Land is also of a suffitient Height to Supor a Canall that Height from Tide to Tide

The Soil is mostly Clay and Lome and no Stones the wells on The Middle Ground and most of the way are from 7 to 12 feet Deep

I am of Opinion that it is most Expedient at first to attempt no other than an Inland Navigation for a barg of about 500 Bushells which Canall may be Done for ⅓ of the Expence of one with Locks Suffitient for a Shallop to pass Through and which at any Time when the Great Utility is Experiance and better known; may be improoved into the other — Without any Considerable Loss in the Present Expence

of Which I Submitt the following Estimate — Viz

14 Miles is 4480 Rodd of a Canall 20 feet wide and 4 feet Deep which is Suffitient for a barge of 500 Bushells which at 20/ p Rodd is — or 6 p Cub. yard — £ 4480 ‖ ‖ Sd

To Which add for Cutting 4½ miles of the Middle Ground 1360 Rodd at 40/ p Rodd Extriordinary — 2720 ‖ ‖

also to build waire houses and fix Ordno — 800 ‖ ‖

£ 8000 ‖ ‖

A dishinal Cost to Acomodate a Navigation for a Shallop; — Enlargeing the Canall to 30 feet wide and 7 feet Deep at 50/ p Rhod — 11200 ‖ ‖

also 40/ Extriordinary on the 4½ miles is — 2720 ‖ ‖

To Erect 2 Locks 2500 £ Each — 5000 ‖ ‖

£ 18920 ‖ ‖

The whole Expence with Locks — £ 26920 ‖ ‖

Which for Speculation and further Improvement is Addressd to the Commite of Merchants and the American Society for improvement of usfull knowledge — in Philadelphia by — Thos. Gilpin

June 1769

Canall from Duikfrik
to Chyster Rivers —

USI

Remarks on the situation & distance between Duck Creek and Chester River —

The Distance from the tide on Chester River to the tide on Duck Creek ... 12 Miles

The whole length of the Canal ..... 14 do.

The heighth of the Middle Ground above the tide ..... 33 feet

The Water in Chester River & Duck Creek streams are sufficient to supply a Canal & Locks 22 feet perpendicular higher than the Tides —

The Length of the Middle Ground is higher than the Surface of the Water in the Canal by 11 feet, at the highest part, and which gradually descends each Way, is in the whole 1¾ Miles. The Land the whole distance is of a height sufficient to support the sides of the Canal from Tide to Tide. The Soil mostly Clay & Loam, free from Stone, the Wells across vary in depth from 8 to 12 feet —

Its supposed that to Cut a Canal at this place suitable to let Flat bottom Boats pass, which would carry 1000 bushells, it will Cost about £80,50 —

That to make it a Compleat Lock Navigation of a Width sufficient to let Shallops pass &c. ..... about 28,300 —

The Height of the Land by a Scale of 30 feet to an Inch

Remarks on the situation & distance between Duck Creek and Chester River —

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The Water in Chester River & Duck Creek streams are sufficient to supply a Canal & Locks 22 feet perpendicular higher than the tides —

The Length of the Middle Ground is higher than the surface of the Water in the Canal by 11 feet, at the highest part, and which gradually descends each Way, is in the whole 1¼ Miles. The Land the whole distance is of a height sufficient to support the sides of the Canal from Side to Side, The Soil mostly Clay & Loam, free from Stone, the Wells across vary in depth from 8 to 12 feet —

Its supposed that to Cut a Canal at this place suitable to let Flat bottom Boats pass, which would carry 1000 bushells, it will Cost about £20,50 —

That to make it a Compleat Lock Navigation of a Width sufficient to let Shallops pass &c ..... about - 28,300 —

Short Observation on the Pleasant Meeting to Consider of the best immediate way to stop & Save the Trade of this Province which is going away from its own Metropolis ——

The reason is Because the expence is less to go to Baltimore Town, the Parts most in danger is the south Parts of Cumberland, York and Chester Counties the means that preserve the trade of these Will all the other parts of course because, they must pass through these to go, the same province to where to trade

The mode is to Render the expence of the Cultivater and the trader cheap and easy and fix on that way which may be improved for the least Money there is such a way; a natural Chanell almost a direct course for 40 miles of the way; a better than made by art, by this and the Remainder of land carriage, to Hanover the very place in danger May be Rendered about equill in expence, to that from lancaster or wrights ferry not more, Hanover is 40 Miles over the Susquehannah in York County this improvement as it runs along the southern Bounds of this Province must Secure all to the Northward from going southward by the same Rule as those to which it Immediately extends do pass ——

The expence of this way was, was it well improved, will be as little from Hannover to this city as to Baltimore town. but should it not Quite, the influence the Connections and dispatch of this city will be equill to 10 pct. on the expence of Carriage, which will Continue if the Trade is preserved ——

The Objection has been to this way, the trade must come by Wilmington I Hope this may be Considerd well, wilmington is a place that exports about ¼ of what Comes immediately to that Landing the Other comes heare its Rare that any has ever stopt in coming by and never at any less price than to have come heare Wilmington does not ship off ¼ of the produce of that County or that comes Immediatly to its Landing besides wilmington is a Child and a good sucor of Philadelphia they apply for their European and all other goods except a little westindia their exports from the Islands they send heare to sell and pay a Commission ——

is this a place to be dreaded or a bugbar sufficient to Cause us to go round at the additional expence of 50 pct. to avoid comeing by it and to loose a Certain Valuable Trade for fear of an imaginary danger — Preserve the Trade of this city and its ascendency will keep down Others but trifle and loose the trade and it falls

N.B. the public Roads in this province is a worthy Consideration and is reproachfully neglected But let the most Mortial be done first the trade is going for want of a Remedy ——

the Trade &c
of Philadelphia
by Samuel &c

Remarks on the Annex'd draft

The distance from the Tide in Chester River to the Tide in Duck Creek is about 12 Miles —

The whole length of the Canal as p Draft 14 Miles

The height of the middle Ground above the Tide 33 Feet

The Waters in Chester River & Duck Creek streams are sufficient to supply a Canal & Locks 22 feet perpendicular higher than the Tides

The length of the Middle ground which is higher than the surface of the Water in the Canal by 11 feet, at the highest part, & w.h gradually descends each way, ~~being~~ is in the whole 4¼ Miles

The Land the whole distance is of a Convenient height to support the Sides of the Canal from Tide to Tide

The Soil is mostly Clay & Loam, free from Stones, the Wells across vary in depth from 8 to 12 Feet

I would propose at first, that an attempt be made for an Inland Navigation only for flatt Bottom'd Boats that will Carry about 1000 Bushells, this may be Compliated at a much less expence than a Lock Navigation, & when the Utility & advantages of such a Communication is fully known & experienced, may be enlarg'd to a Compliat Canal for Shalloops &c, with Locks, ~~which may be Done~~ without any Considerable loss in the first Expence

A Calculation of the expence of Cutting a Canal agreable to the above proposal

To Digging 14 Miles or 4480 Rods, the whole length of the Canal, 16½ feet wide & 4 feet deep is 40 Cube Yards in each Rod a 4/7 yd is 15/ p Rod	3360 —
To Digging the middle Ground 4¼ Miles or 1360 Rods to be Deep on an average 8 feet deeper will Cost more proportionably on Acc.t of the Depth, say 37/6 p Rod is	2550 —
To Digging 10 places in the Canal for Boats to pass each other	100 —
Carried Forwards	£ 6010 —

Brought Forwards	£ 6010 —
To expence of Securing the two ends of the Canal & making them Convenient to Load & unload	200 —
To expence of building 3 Tumbling Dams, on the branches of Chester River & Duck Creek, to Carry off the superfluous Waters	140 —
To Building 2 large Draw Bridges for public Roads	300 —
To Building 2 smaller D°	100 —
To Building a Commodious Warehouse at each end of the Canal, & erecting Cranes &c	800 —
To Cost of Tools, Whulbarrows &c	100 —
To Liquors	100 —
To Expences of building Temporary Houses, Tents Kitchen Furniture &c	300 —
	£ 8050 —

A Calculation of the additional Charges of altering the above Canal, into a Lock Navigation

To widening the Canal from 16½ to 30 feet & from 4 to 7 feet deep, makes 113 Cube Yards to each Rod Digging, — as it will be so much deeper than Before will Cost at least 60/ ₩ Rod 4480 Rods, — @ 60/ — is	13440 —
To digging 4¼ Miles, the deepest part of the Canal will Cost 40/ ₩ Rod extra for 1360 Rods	2720 —
To Dams, Bridges &c, Charg'd in the first	—
To Expences of building a Lock 100 feet in length, 15 feet wide, whole Walls 35 feet high, Sides 6 feet, & Ends 10 feet thick is 2860 perch of Stone 4/ is £ 572 —	[illegible]
Digging Masons Work & Lime 4/ ₩ perch 572	
6 Lock Gates & Casing the Inside w.th plank 300	
Iron Work 200	1644 —
... D° for another Lock	1644 —
Carr. Forwards	£ 19448 —

Pro.d Forwards	£ 19448 —
Tools &c	100 —
Liquors	200 —
Temporary Houses Tents Kitchen Furniture &c	500 —
	£ 20,248 —

All which is Submitted, to the Consideration of the American Society held at Philadelphia for promoting usefull knowledge & the Committee of Merchants, by

Thos. Gilpin

Philad.a 6th Mo: 15th 1769

Daniel Pom
Berlin to Derby
June 15. 1769.

DSI

The General Remarks made by the Gentlemen who were Appointed to Examine & Level the Ground Lieut from Delaware to the Maryland Rivers are as follows

Distance from the tide on Chester River to the tide on Duck Creek ——— 12 Miles

Whole length of the Canal ——— 14 do

Height of the Middle Ground above the Tide ——— 33 feet

The Water in Chester River & Duck Creek Streams are sufficient to supply a Canal & Locks 22 feet Perpendicular higher than the Tides ———

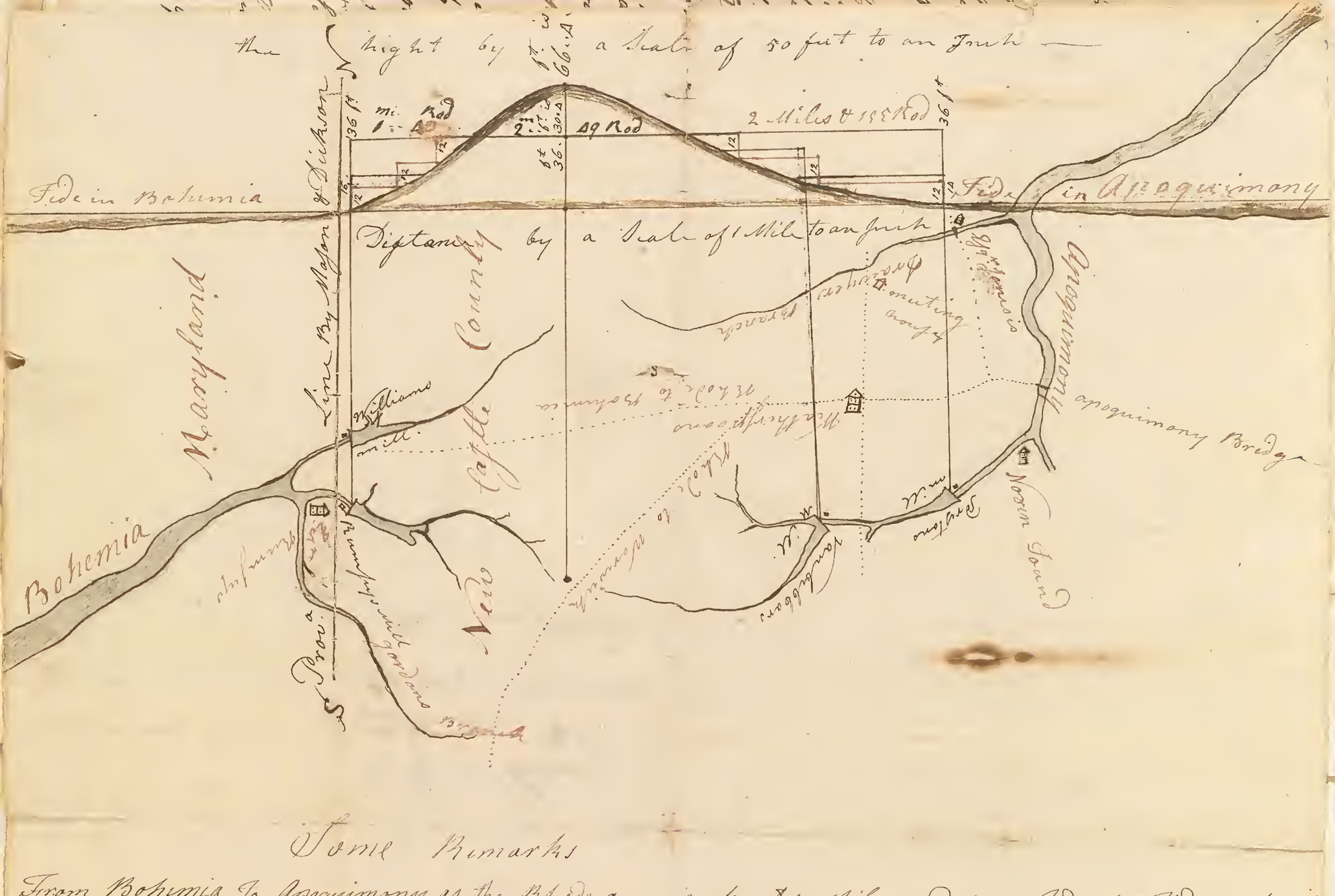
The Length of the Middle Ground is higher than the Surface of the water in the Canal by 11 feet, at the highest Part, & which gradually descends each way, is in the whole 4 1/4 Miles. The Land the whole distance is of a height sufficient to support the Sides of the Canal from Tide to Tide. The Soil Mostly Clay & Loam, free from Stone, the Wells across vary in depth from 8 to 12 feet ———

It is supposed that to Cut a Canal at this place suitable to let Flat bottom boats pass, which would Carry 1000 bushells, it will Cost ——— ab.t £8050 ———

That to Make it a Compleat Lock Navigation, of a width sufficient to let Shallops pass &c ab.t ——— 28,300 ———

Thus far the Remarks on what relates to the Canal if Cut, between Duck Creek & Chester River ——— Made by Thomas Gilpin ———

Notes of Canal
Bohemia &c
appequinimink
& Drawers books.



Some Remarks

From Bohemia to Apoquimony as the Rhode goes is about 7 Miles and from Tide to Tide not quite Six the Rhode is very good and the Carridge Cheape it lays Sligh up Chesepeak Bay and a Little ads Betwene Philad.a Markitt and Baltimore Town will Command the Trade a Crop and theare is no Place on Chesepeak Bay that Exports Very Near the Land is Sligh — Betwene the above and the Water Small Even at 30 feet Sligh — if a Canall is Dug I Wald Propose an Inland Canall for a barge of 1000 Bush.s which Wald in Part answer in Lieu of altering it to a Lock Navigation only in this that as it is too Sligh for one Lock the Same Course wald not Do all the way

Comparison Betwene Bohemia & Chester River — Bohemia is Convenient to the Western Shore Baltimore County in Particular and the Inhabitants of Cecill County out of Chester is a Thouroughfare into Wye Miles & Tredhavin Rivers at 60 Miles without going into the Bay Who now go to queens town Chester Town George Town & Baltimore Town but was theare a Canell to Duck Creek a Small ads in the Price wald Encourage it to go to Philad.a —

the hight by a Scale of 50 feet to an Inch —

Some Remarks

From Bohemia To Apoquimony as the Rhode goes is about 7 Miles and from Tide to Tide not quite Six the Rhode is very good and the Carridge Cheape it Lays Light up Chesapeak Bay and a Little ods Betwene Philad.a Markitt and Baltimore Town will Command the Trade a Cross and theare is no Place on Chesepeak Bay that Exports Very Near the Land is Light — Betwene the above and the Water Small Even at 30 feet Light — if a Canall is Dug I Wold Propose an Inland Canall for a barge of 1000 Bush.s which Wold in Part answer in Lieu of altering it to a Lock Navigation only in this that as it is too Light for one Lock the Same Course wold not Do all the way —

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Canal
Bohimia
to
Apaquimoni

Remarks on the situation & distance between Appoquinimy & Bohemia are

That the distance from Tide to Tide is - - - - - - - - - - - - - - 5 Miles 107 Perches

The heighth of the Middle Ground above the Tide - - - - - - - - 66 feet 4 Inches

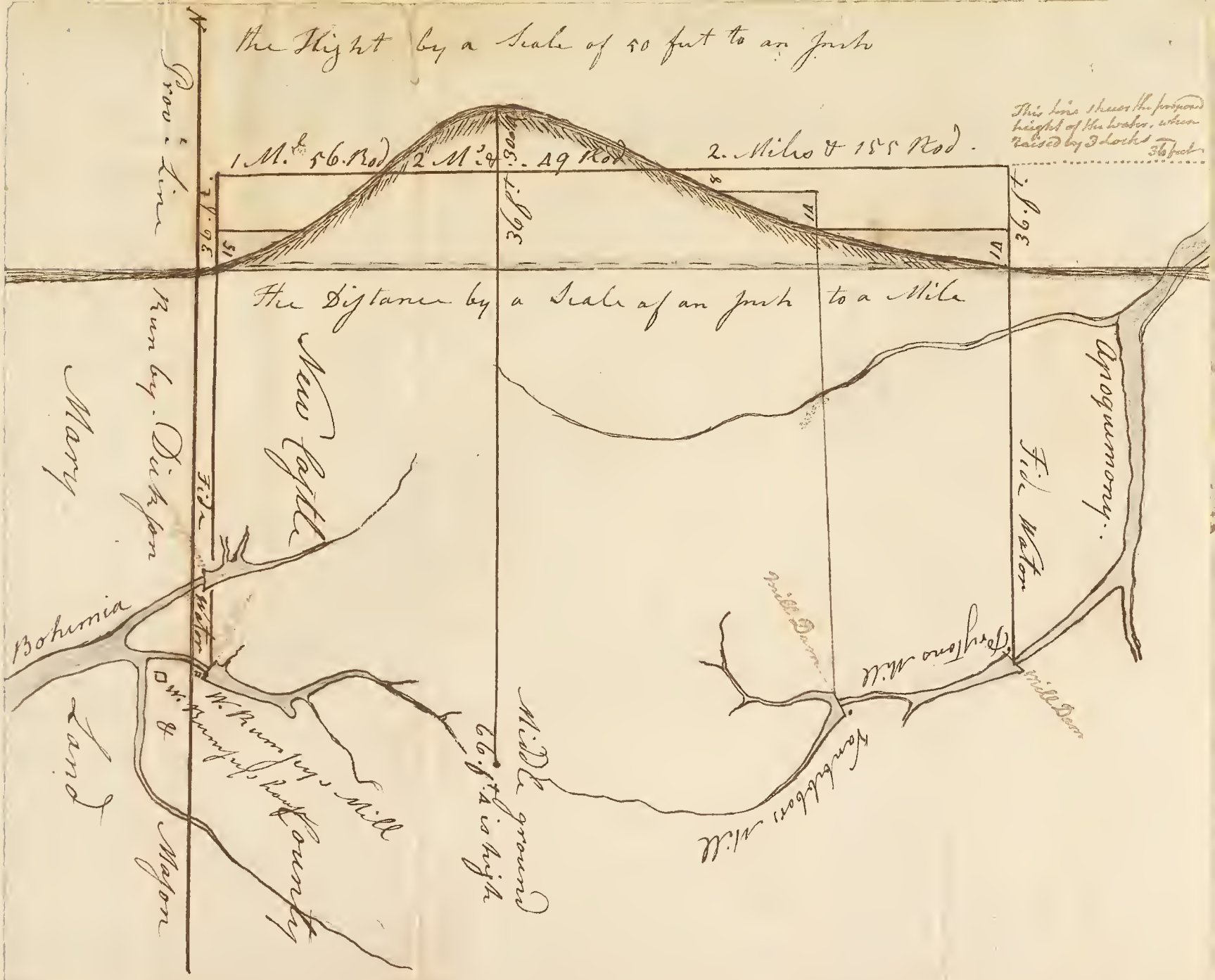
The Water in the head Branch of Bohemia is 12 f.t 5/8 in.s below the surface of the Earth, near to the Extream depth. —

The Water on the head branch of Appoquinimy is 14 f.t 4 3/4 in.s below the surface of the Earth, about 3/4 of a Mile from the Extream Depth

It is presumed that to dig the above 66 1/3 feet, there will be in the Canal 6 feet Water, Issuing from Bohemia & Appoquinimy, without Counting Upon the Waters flowing from Springs —

That this Navigation will require 6 Locks —

That there must be Moved 208804. 9 Cubic Yards of Earth which, with the Stone Wall, cost of Locks, the purchase of 3 Mills & other Expences, will Amount to - - - - - - - - - - £40,000. —



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DISP

Remarks on the Situation & distance between Appoquiniminy & Bohemia Are ——————

That the distance from Side to Side is - - - - 5 Miles 107 Poles

The height of the Middle Ground above the Side - - 66 feet 4 Inches,

The Water in the head Branch of Bohemia is 12 ft. 5/8 in below the Surface of the Earth, Near to the Extream depth ——

The Water on the head branch of Appoquiniminy is 14 ft. 4 3/4 in below the Surface of the Earth, about 3/4 of a Mile from the Extream depth ——

It is presumed that to dig the above 66 4/8 feet, there will be In the Canal, 6 feet water, flowing from Bohemia & Appoquiniminy, without Counting Upon the Waters flowing from Springs ——

That this Navigation will Require 6 Locks -

That there m[illegible]

[illegible]

ing the Damb highor than you otherways
or making the gates Differants from what
I & addingone
would make bney &c — we will Send
is to hang the gates — & a plan of them
. 3. 1772 —

F. Gilpin

Note on Repayes
of Brass Tree &c
Mill Pieces &c

Memorandum of the Size of the gates at the head of the Race to Lett through a Batoue the Cap Sill aught to be 5 fut higher than the tops of the Damb. to Kep out a fresh — one Side of the gates aught to be 18½ fut in the clear. & a gate to hang on Hinges to open up Streame & when it Shutts fall into Large Rabitts & the middle post Strong — the other Side only a Common Slatch as — other gates have — & if that dant Lett in water a nuff there may be also a Common Sliding Slatch in the middle of the one that opens — So as to Lett in more &c

there ought be another Sett of gates first at the Distance of 60 fut Lower down the Race than the other made in the Same manner in the port that opens Like a Door. had better be a Strong frame & planked a top of it — the Damb aught to be as — high as the old Damb other ways there will be a — fall there where a Lock cannot be made I think if the water is Raised one foot higher in the Race than it now is, which will be at one fut Nine Inches or two fut Deep in Shale places, that a Diffell to Carry 100 bu. may go in we will try it & if it will do we will give £100 towards the Damb & Repairing the Race &c in making it Compleate. & if it Cannot be made to answer we will at Least pay any extraordinary Expence that may be done in —

EXPLANATION

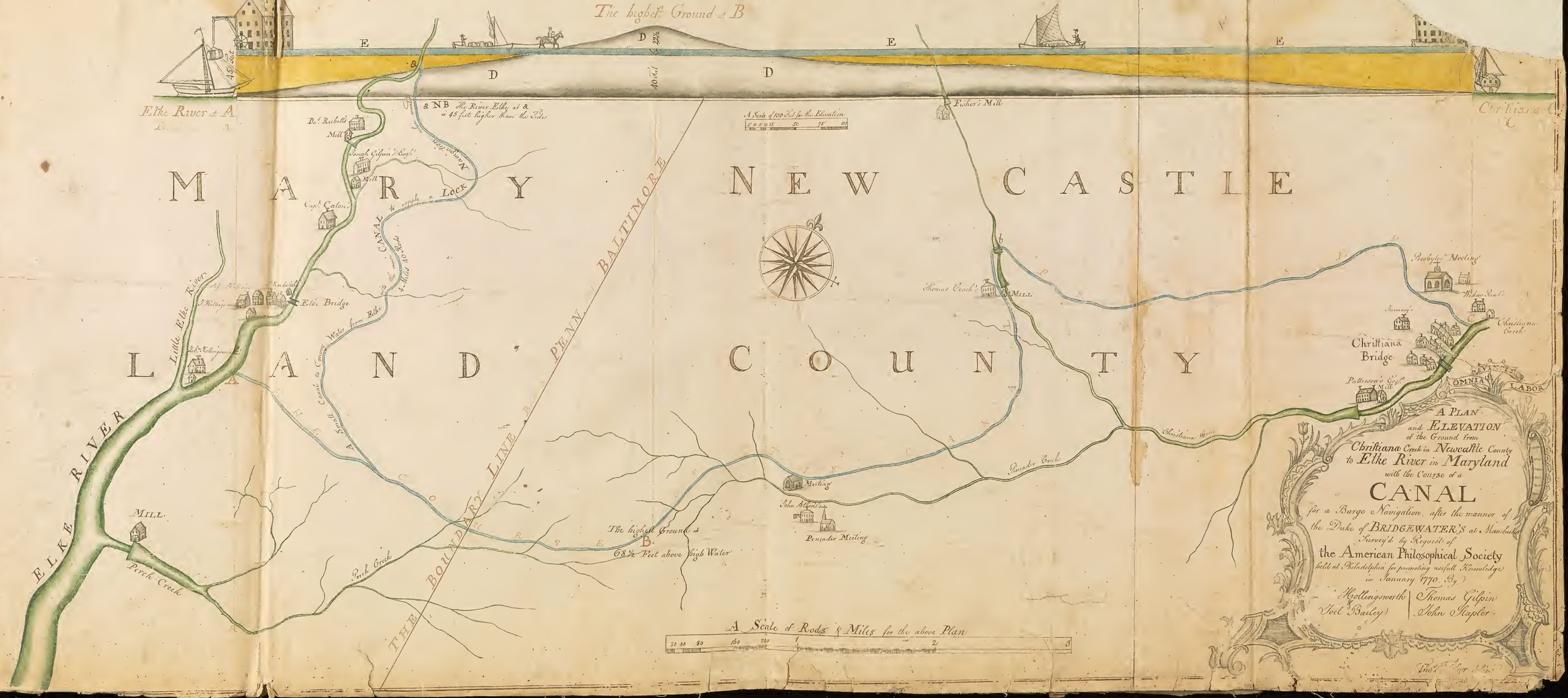
The Shaded Ground DDD [illegible] the Elevation of the Ground following the Bottom and Courses of the Planned Canal along Christiana and Pencader Creek, on one side, and Elke River on the other.

The top of the Blue EEE shows the height of the Water in the Canal, which is the Elevation of the Ground along the Course of the Canal. The distance from Christiana Ck. to Elke River, direct is 9 Miles 35 Rods, & by the Course of the Canal 12 Miles 12 Rods.

REMARKS

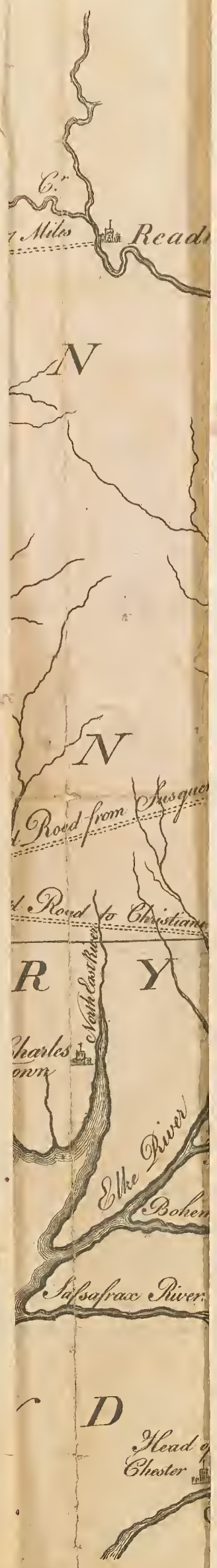
This Canal may at [illegible] be made a Lock Navigation, for [illegible] by digging it wider and deeper; a [illegible] at each end, to supply which the Waters of Elk River at a and of Christiana at b, are altogether sufficient, both as to [illegible] and height.

The Tide in Christiana Creek is two Feet seven Inches higher, than in Elke River, at high Water.



A PLAN and ELEVATION of the Ground from Christiana Creek in Newcastle County to Elke River in Maryland with the Course of a CANAL for a Barge Navigation, after the manner of the Duke of BRIDGEWATER'S at Manchester. Survey'd by Requests of the American Philosophical Society held at Philadelphia for promoting useful Knowledge in January 1770. By Hollingsworth Joel Bailey Thomas Gilpin John Hapler

DSI


Cr.
Miles
Read
N
N
Road from Susque
Road to Christiana
R Y
Charles
Town
North East River
Elke River
Bohem
Sassafrax River
D
Head o
Chester

A Computation of the Cost of a Navigation for Barges from Christiana Bridge to the Head of Elk

Distance 12 Miles and 10 Rod by the Courses of the Canal at 18 feet Wide and 6 feet Deep is 253550 Cubick yards of Earth to be Thrown out which at 6 ₰ yard is	6338	15	0
2 Miles of the Middle Ground will Require to be Lett in Depth and 30 feet in Weath on a Avarage more than the Other which 17600 Cubick yards ... @ 12	880	"	"
Makeing a Dam a Cross Christiana to Vend Superfluous Water and to carry the Canal Over in	300	"	"
Makeing 4 Small Dams over some small Vallers save Digging further Round and to give place for Boats to Pass each other in Say £100 each is	400	"	"
Digging 4 points of small Hills or Banks to Save Digging Round &c Say £100 Each	400	"	"
Expence of Tools, Liquors, small Houses for Workmen to Lay, Cook &c Say	500	"	"
To a Fund for raising the Sum of 180 ₰ year to pay the ware and Sare & taking care of the Locks ... &c ... &c	3000	"	"
To purchaseing 2 Mills that Owns the Water which will be wanted for Supplying the Locks	5000		
	£ 13311	"	"
	£ 55562	" 15	0

The odds is £13311 the yearly Interest of which is £2600 " 12 " 10

The Carriage may be done by a Barge Navigation for 1 ₰ Bushell or 3 ₰ Barrel at which Supposed 300,000 Bushells is @ 1 £1250 And 100,000 barrells is @ 3 £1250 is ₰ year £2500

As the Interest of the Odds in Cost between a Barge and Lock Navigation May be Supposed to be Altered Lay the Freight by Barges; we conceive that method most Adviseable, more especially as it may at a future day without any considerable loss in the first Expence to that of Locks

Thomas Gilpin
Jun. Wilmington

John Naylor
Joel Bailey

A Computation of the Cost of a Navigation for Barges from Christiana Bridge to the Head of Elk

	£	s.	d.
Distance 12 Miles and 10 Rod by the Courses of the Canal at 18 feet Wide and 6 feet Deep is 253550 Cubick yards of Earth to be Thrown out which at 6 ₰ yard is	6338	15	0
2 Miles of the Middle Ground will Require to be 8 feet in Depth and 30 feet in Weath on a Avarage more than the Other which 17600 Cubick yards ... @ 12	880	"	"
Makeing a Dam a Cross Christiana to Vend Superfluous Water and to carry the Canal Over in	300	"	"
Makeing 1 Small Dam over some small Valleys save Digging further Round and to give place for Boats to Pass each other in Sa £100 each is	100	"	"
Digging 1 points of small Hills or Banks to Save Digging Round &c Say £100 Each	100	"	"
Expence of Tools, Liquors, small Houses for Workmen to Lay, Cook &c Say	500	"	"
To a Fund for raising the Sum of 180 £ year to pay the ware and Sare & taking care of the Locks ... &c ... &c	3000	"	"
To purchaseing 2 Mills that Ownes the Water which will be wanted for Supplying the Locks	5000		
£	13311	"	"
£	55562	15	0

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Thomas Gilpin
Lewis Hollingsworth
John Taylor
Joel Baily

Calculations
of Canal
Christiana to
Elk


Plate VII. Fig 1.
Tulpihocken Cr.
Reading
Propos'd Road from Harris's Ferry to Reading 47 Miles
Harris's Ferry
Conococheague Cr.
Yellow Breeches Cr.
Swatara Cr.
Conewago Cr.
Susquehannah
Codorus Cr.
Chickisalunga Cr.
Lancaster
Wrights Ferry
River
Conestoga Cr.
Pequea Cr.
York
P E N N S Y L V A N I A
Schuylkill River
PHILADELPHIA
59 Miles
Philadelphia
Chester
Marcus Hook
Propos'd Road from Susquehannah to Philadelphia
Nelsons Ferry
Muddy Cr.
Peach Bottom
Proposd Road to Christiana
32 Miles
Brandywine
N. E. W.
Willmington
Christiana Bridge
Newport
Christiana Cr.
Newcastle
NEW
Boundary Line
M A R Y L A N D
Bald Fryar Falls
Conococheague
Octoraro Cr.
North East River
CANAL
H
C. A. S.
G
F
Deer Cr.
Charles Town
JERSEY
A Scale of Miles
1 2 3 4 5 6 7 8 9 10 15 20
J. Smither Sculp.
Long Cr.
E
Broad Cr.
St. Georges Cr.
T L E
Drawyers Cr.
Swan Cr.
Elke River
Bohemia River
CANAL
A
B
Appoquiminy Cr.
DELAWARE RIVER
Bush Town
Bush River
Sassafrax River
Boundary between Maryland & the Lower Counties
Blackbird Cr.
Joppa
Gunpowder River
CHESAPEAK BAY
COUNTY
Duck Creek Town
Duck Cr.
L A N D
Head of Chester
CANAL
D
Cross Roads
C
Baltimore Town
Patapsco River
Kent County
N.B. The propos'd New Roads are distinguish'd by Dotted Lines, thus the propos'd Canals by black Lines thus

REMARKS.

THE common rates of land-carriage for a loaded waggon is nearly about 12d. per mile; a load is on good roads 14 barrels, or 3000 weight, on middling, 12 barrels, or 2500 weight, on bad, less. This is allowed for 4 horses double, or 5 single, to travel with on a journey, short carriages may take more.

From Philadelphia to Lancaster is		62 miles,	worth,	£.	3	2	0
Ferriage over Schuylkill,			- - -		0	5	0
If the roads are made good, 14 barrels may be carried at these rates, or 3000 weight.	To Wright's,	12	- - - -		0	12	0
	To York,	13	- - - -		0	13	0
		87	Philadelphia to York-town,		4	12	0
	To Hanover,	18	- - -		0	18	0
				£.	5	10	0

The freights from Philadelphia to Christiana Bridge and Newport, is 6d. per barrel, which, for the above load is equal to 7 miles land carriage, at which rate it may be fixt as it can be, and is done at that rate.

Therefore, from Philadelphia to Christiana,	7 miles.		£.	0	7	0
to Susquehanna,	32	- - -		1	12	0
to York,	30	- - -		1	10	0
	69	Philadelphia to York-town,		3	9	0
From Susquehanna to Hanover is 10 miles further than to York-town, which adds 10s. to		- - - -		0	10	0
			£.	3	19	0

Hanover is in the part of the country where the trade is most in danger, and the carriage of goods or produce from that part, can be brought to this city for 79s. which is less than by way of Lancaster, 31s. per load of 14 barrels, or 3000 weight, and as the Susquehanna river will accommodate all the western and nothern inhabitants of this province, and enable them to make use of the same channel.----This seems to be the most natural and most immediately worthy of notice with respect to preserving the trade, for even the town of Lancaster and all the mills around, do find their advantage in making use of this way to convey their heavy goods from thence to Philadelphia, which will appear by the following estimate on the expence of carriage. viz.

From Lancaster to Philadelphia,	62 miles,	- - - -	£.	3	2	0
From Lancaster to Newport,	42	- - - - -		2	2	0
For the same load from Newport to Philadelphia,	equal to 7 miles,	- - - -		0	7	0
by way of Christiana,		- - - - -		2	9	0
Saved per load of 3000wt. or 14 barrels,		- - - - -		0	13	0
To Ferrage over Schuylkill,		- - - - - -		0	5	0
In favour of coming by way of Christiana,		- -	£.	0	18	0

This is so considerable, that no turnpike can turn the carriage from this natural channel, [redacted], the road will bear improvement that way equal to any other.

If a canal or intire water communication can be accomplished, it will greatly exceed any other, as the proportionable deduction is found on experiments, even from the best land carriage, is near 4-5ths, but say 3-4ths saved, it would sooner pay the expence of improving, with the interest, than any other.

The red line is nearly where a channel may be had, and perhaps by the necessary meanders, may be 100 miles, which may be done for about 40s. per rod on an average, which is three times what some part may cost, this is £. 64,000. But as the making a canal will require considerable time, and the present cause calls for immediate relief.

Perhaps it may be thought best to make use of the natural channel already done for about 45 miles on the direct way, and only add to that natural advantage (Christiana,) the expence of a good road which will ever be useful, and a free Ferry over Susquehanna, which will so lessen the expence of carriage from the parts in danger, as to leave but nine shillings per waggon load in favour of going to Baltimore, which the superiority of Philadelphia market will greatly over-balance. As to the thoughts of a turnpike road from York by Lancaster was it ever so good; the distance to go all the way by land is so great, that the odds cannot be less than 32 s. between going to Baltimore or Philadelphia market, therefore there seems but little hopes of a remedy except by taking the advantage of what nature has done, which will reduce the odds to about nine shillings; and the very inhabitants of Lancaster now save 18s. in every waggon load of produce, by making use of this natural conveyance to this market.

Philadelphia, January 20, 1772.


PENNSYLVANIA.
MARYLAND.
NEW JERSEY.
NEW CASTLE COUNTY.
Kent County.
Reading.
Talpehocken Creek.
Schuylkill River.
Harris's Ferry.
Conococheague Cr.
Yellow Breeches Cr.
Swatara Creek.
Conewago Cr.
Susquehannah River.
Cedarus Creek
Chickifalungo Cr.
Lancaster.
Wrights Ferry.
Conestogo Cr.
Pequea Cr.
York.
Burholders Ferry
Nelsons Ferry.
Muddy Cr.
Boundary Line.
Peach Bottom
Bald Friar
Falls.
Canal
Ogorsaria Cr.
Dear Cr.
Johnsons Ferry
Swan Cr.
Bush Town.
Bush River.
Joppa.
Gunpowder River.
Baltimore Town.
Patapsco River.
CHESAPEAK BAY.
Charles Town
Elkton.
Newark
Christiana Bridge.
Newport.
Wilmington
Brandywine Cr.
Marcus Hook.
Chester.
PHILADELPHIA.
New castle.
Broad Cr.
Bohemia River
Sassafrax River.
Cr. Elke River.
St. Georges Cr.
Drawyers Cr.
Appoquinimy Cr.
Blackbird Cr.
Duck Cr.
Duck Creek Town.
Cross Roads.
Head of Chester
Line between Lower Maryland and the Boundary
CANAL
DELAWARE RIVER.
59 Miles

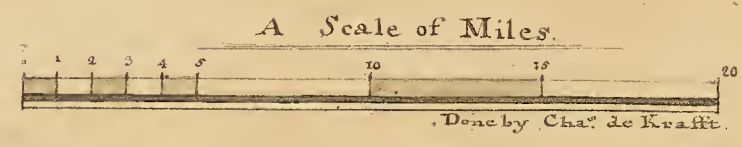

PENNSYLVANIA
MARYLAND
NEW JERSEY
NEW CASTLE COUNTY
Kent County
Reading
Harris's Ferry
Swatara
Conewago Cr.
Yellow Breeches Cr.
Conodoguinet Cr.
Susquehannah
Cocorus Creek
Chickifalungo Cr.
Lancaster
Wrights Ferry
River
Conestogo Cr.
Pequea Cr.
York
Tulpehocken Creek
Schuylkill
River
PHILADELPHIA
Chester
Marcus Hook
Brandywine Cr.
Wilmington
Newport
Christiana Bridge
Christiana Cr.
New castle
Elkton
Nelsons Ferry
Muddy Cr.
Boundary Line
Bald Friar Falls
Canal
Ogorata Cr.
Dear Cr.
Charles Town
Johnsons Ferry
Swan Cr.
Bush Town
Bush River
Joppa
Gunpowder River
Baltimore Town
Patapsco River
CHESAPEAKE BAY
Elk River
Bohemia River
Sassafrax River
Broad Cr.
Sc. Georges Cr.
Drawyers Cr.
Appoquinimy Cr.
Blackbird Cr.
Duck Creek
Duck Creek Town
Cross Roads
Head of Chester
Mason and Dixon's Line
Lower Line between the Counties
DELAWARE RIVER
59 Miles

REFERENCE.

The propoſed New Roads, are diſtinguiſh'd by light brown Colour, & the Diſtances of it marked with red Letters.

The propoſ'd Canals by green Colour, & marked with red Capital Letters.

A Scale of Miles.



Done by Chas. de Krafft.